5:15

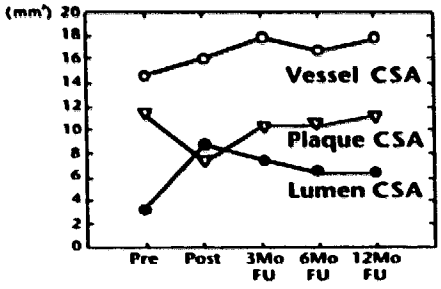
866-6 Time Course of Neointimal Proliferation and Arterial Remodeling After Directional Atherectomy: Serial Ultrasound Observations From Adjunctive Balloon Angioplasty Following Coronary Atherectomy Study

H. Hosokawa, O. Kato, H. Tamai, T. Yamaguchi, T. Aizawa, T. Suzuki, ABACAS Investigators. *National Toyohashi Higashi Hospital, Toyohashi, Japan*

To assess the mechanisms of late arterial response to directional atherctomy (DCA), we analyzed serial intravascular ultrasound (IVUS) measurements in the subset of Adjunctive Balloon Angioplasty Following Coronary Atherectomy Study (ABACAS).

Methods: In 39 pts out of 214 pts, who were randomized to DCA alone or to DCA with adjunctive PTCA, prospective serial IVUS was performed at pre and post-procedure, and at 3, 6, 12-month follow-up.

Results: Vessel area increased gradually through the follow-up period, while decreasing at 6 months temporarily. Plaque area increased rapidly up to 3 months and later on little slow increase occurred. As the result, lumen area decreased until 6 months and plataued through 12 months.



Conclusion: Long-term vascular response after directional atherectomy consists of early rapid and late slow neointimal proliferation and gradual compensatory enlargement of the vessel.

867 New Surgical Techniques: Partial Left Ventriculectomy and Transmyocardial Laser Revascularization

Tuesday, March 31, 1998, 4:00 p.m.–5:30 p.m.
Georgia World Congress Center, Room 261W

4:00

867-1 Autopsy Findings in Early and Late Post Operative Death of Partial Left Ventriculectomy

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Background: Partial left ventriculectomy (PLV) is a new surgical procedure which has been proposed for the treatment of heart failure in dilated hearts. However, the morbidity and mortality have been considered too high in most serial cases. The autopsy findings may contribute to understand the reasons of such bad outcome.

Methods: In our Institution, 34 patients were submitted to PLV. They were followed for mean 10.5 months and 13 of these patients died. Actuarial survival was 57% at one year of follow up. The present study analyses in detail the necropsy findings of 11 cases (10 male, age varying from 33 to 58 years old) in order to provide data that could be associated to the unsuccessfulness of the PLV.

Seven patients presented immediate post-operative death (less than 30 d), four due to cardiogenic shock, two with arrhythmia, and the last one with coagulopathy. Four patients had late post operative death (from 36 to 120 d), one due to arrhythmia (ventricular tachycardia) and three to cardiogenic shock.

All hearts exhibited myocardial infarction adjacent to the surgical incision, measuring from 3 to 6 cm and generally extending to the papillary muscles. The three patients that died due to arrhythmia presented infarction in both papillary muscles. A 2 cm viable zone of myocardium was observed adjacent to the mitral annulus. Severe diffuse pericardial hemorrhage was found in one patient who died due to arrhythmia. In two cases of late death due to cardiogenic shock the necropsy revealed severe pericardial hematoma juxtaposed to the surgical incision, compressing the myocardial wall which was thinned due to ischaemic lesions..

Conclusions: Pericardial hemorrhage and myocardial infarction, mainly in the papillary muscles, are complications of the PLV and could be associated with the development of arrhythmias or heart failure in the early or late post operative period.

4:15

867-2 Heterogeneous Immediate Effects of Partial Left Ventriculectomy on Cardiac Performance

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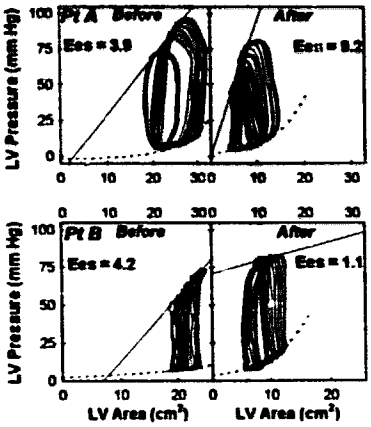
Partial left ventriculectomy (PLV) for pts with severe heart failure has been associated with improvements in LV ejection fraction (EF), although pt outcome has been variable. To assess its immediate effects on LV performance, 8 consecutive pts were studied using high fidelity pressure catheters and TEE automated border detection. Diseases were: idiopathic dilated cardiomyopathy in 5, Chagas disease in 1, aortic regurgitation in 1, and ischemic cardiomyopathy in 1. Pressure-area relations were acquired before and after PLV. One pt. with intraoperative myocardial infarction died. In the remaining 7 pts, LV volume decreased from 200 ± 6 to 89 ± 17* ml and EF consistently improved from 12 ± 3 to 41 ± 8* % (*p < 0.01). However heterogeneous immediate results in LV end-systolic elastance (Ees): 5.2 ± 4.6 to 4.6 ± 2.5 mmHg/cm^2) and preload recruitable stroke work: 31.9 ± 10.3 to 36.6 ± 19.3 mmHg were observed (p = n.s.). LV stiffness increased from 0.11 ± 0.03 to 0.17 ± 0.07* mmHg/cm^2 (*p < 0.05).



Conclusion: PLV is associated with immediate increases in EF. However, LV stiffness increases and heterogeneous effects on systolic performance occurred. Further study of these effects in relation to patient outcome is warranted.

4:30

867-3 Improved Regional Blood Flow and Wall Motion six Months Following Transmyocardial Laser Revascularization

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Background: Transmyocardial laser revascularization (TMR) relieves angina in patients not candidates for conventional revascularization. The mechanism however, remains controversial. To evaluate the functional effects of TMR, we studied regional blood flow, vascular density, and wall motion in a porcine model of chronic ischemia.

Methods: Ameriod constrictors were placed around the left circumflex coronary artery in 10 pigs. The TMR-group (n = 5) underwent TMR of the area at risk using a carbon dioxide laser 1.5 months later and controls (n = 5) had ameriods without TMR. The area at risk was studied with high resolution epicardial color Doppler echocardiography 7.5 months after ameriod and analyzed by a blinded observer. A vascularity score (VS) was used to describe blood flow in vessels >0.7 cm in diameter: 0-normal, 1-hypokinetic,

	Median VS	Median WMS	Mean#Vessels/Section
TMR-group	3 (range 3–4)	0 (range 0)	4.3 ± 0.15
Controls	1 (range 1–2)	1 (range 1–3)	3.1 ± 0.14
P-value	<0.001	<0.01	<0.0001